Fire, chaparral, and survival in southern California. Richard W. Halsey, editor and author. 2005. Sunbelt Publications, San Diego, CA. ISBN 0-932653-69-3. $19.95.

Mother Nature has lavished many gifts on California, but she has made mistakes. Some were easily corrected. Grizzly bears were too fierce and unpredictable, but they trouble Californians no longer. Water was poorly distributed, but it now flows freely into the semi-arid southern counties. Other imperfections of the California environment have resisted easy correction. Two in particular continue to bedevil the state—earthquakes and fire. As is pointed out in the volume under review, the popular response to these two challenges has been strikingly different. Few expect the earthquake problem to be solved any time soon. It is understood that if you want to live in the land where the lemon tree flowers and the laurel sumac perfumes the air you must run the risk of being buried under a collapsing building. The public accepts the costs of the precautions which reduce risk, and they also accept that although the risk is small, it's there and nothing can make it zero.

Like earthquakes, fires are a recurrent phenomenon in California that shows no signs of going the way of the grizzly bear. On the contrary, as measured by damage to life and property, the wildland fire situation seems to be getting worse. One might therefore expect that people would accept it as a fact of life, pay the costs necessary to reduce its impact, and adjust their affairs accordingly. In the opinion of Halsey (chief author and editor) and probably most of the contributing authors of this volume, the contrary is true. The public seems to view fire not as an act of God, but as the act of fools and criminals—a bad thing which has happened to them because of the incompetence or negligence of others.

It is the premise of this volume that this attitude must be changed if we are to find a workable solution to the chaparral fire problem, and that education is the key. Halsey clearly believes that if people only understood how the natural system works and came to respect it, they would see the way to deal with fire. This puts him firmly into the camp of those who think the fire problem is not a fire problem, but a people problem.

A notable achievement of the author/editor was to have moved the book from conception to publication in a very short time after the 2003 fires. Halsey accomplished this by writing much of the text himself, but also soliciting contributions for others and gluing these together with introductory remarks and bridging commentary. The timely appearance is commendable and significant. Anyone who has lived through past fire disasters knows that the sharp spike in public interest immediately after a disaster drops faster than a *Phacelia brachyloba* population. There is the disaster-awareness equivalent of the "teachable moment".

The book is grouped into eight chapters with a total of 16 authors (including the author/editor). Another six persons made other contributions. There are indeed, as the author states "many voices in this book". As the title indicates, the book focuses on southern California, and therefore on the brush-woodland systems that are the main vegetation associated with the fire problem. Montane forest types are only touched on lightly, as is appropriate.

The most important parts of the book are those that expose the weaknesses in the simplistic thinking behind the "kick butt and take names" approach to reforming wildlands management—the approach that calls for mass firings in government agencies, or burning everything on a 5 year rotation (but not hiring any new people to do it), or clearing all vegetation to mineral soil for 500 ft into adjacent publicly owned areas (but not requiring any removal of eucalyptus or pines in their own landscaping), or doubling the number of pilots and fire-fighting planes (but not increasing taxes). Such views assume that a naturally friendly system has been mismanaged to become a menace. But what does science tells us? Contributions of Keeley and Fotheringham and Moritz, as representatives of the science community, cast very serious doubt on this assumption. Keeley and Fotheringham present historical data that show that fire size is either getting smaller or staying roughly the same. If there is mismanagement, it hasn't manifested itself by making burns significantly larger. But what *has* definitely changed is the human population, which has increased by a factor of 30 over the last century. How can anyone doubt that this huge increase has something to do with our present dilemma, in which people and fire seem to intersect more often and more disastrously than they did in the past? From this follows one of the main points emphasized in the book—that the intrusion of poorly planned developments into wildlands is a major part of the problem. What is frustrating is that everyone knows this, but little is being done about it.

Moritz, who has made interesting contributions to our understanding of fire as a stochastic process, stresses the importance of concentrating our hazard reduction efforts in the places where they will have the most effect. This idea is not new[1], but it deserves to be stated again—as it is in several other places in the book. The resistance to the work-the-edges concept can be compared to the widespread refusal to grasp the realities of global climate change. Research scientists who are familiar with shrubland fire problems are near unanimous in advocating this approach, but because the message is not what people want to hear, and because in the short run they see no consequences of inaction, they refuse to listen. This fact justifies the premise of this book.

Managers of wildlands adjacent to urban areas are on the front lines of the struggle to deal with chaparral fire, and are in the best situation to tell us what works in practice. This makes the contribution of Witter and Taylor, relating the programs at the Santa Monica Mountains of particular importance. Wildland islands in an urban sea are now cut off from regional fires, but simultaneously are susceptible to arson and accidental ignition. Thus, a laissez-faire approach to fire is not an option. Although complete fire exclusion would in the long run be bad for the

[1] The publication *Proceedings of the Symposium on Living with the Chaparral* 1974. C. Rosenthal Conference Chairman, and M. Rosenthal, Editor, Sierra Club, San Franscisco, CA, is one example. Larry Moss (Sierra Club) wrote: "Our greatest problem is, of course, the development of housing patterns that reflect little understanding or respect for the needs of chaparral." J. Zivnuska (University of California) ". . . it becomes clear that there are three main ways [of minimizing the costs of damage from fires] . . . 1) changes in the locations in which structures are built and people live; 2) changes in the nature of the facilities constructed; and 3) changes in the relationships of fuels to structures. P. Zedler wrote: ". . . the wise use of chaparral resources [requires] the placement of human developments in locations where they will not be endangered every time [there is a wildfire]". Thirty years later we are still trying to get this message across.

vegetation, this is a purely hypothetical problem—the arsonists will make sure of that. The real threat to the Santa Monica Mountains is too much fire. The authors make their points with restraint, but one deserves to be restated in a stronger form: The fuels-based "mosaic model" based on management burns across the entire landscape and the great hope of the previous century, has been a complete failure. The plan that has been adopted in the Santa Monica Mountains is based on strategic hazard reduction targeted to specific areas where it is most likely to make a difference.

A good portion of the book is taken up by contributions from practitioners, agency staff, and interested citizens. Collectively these are a good feature of the book and a source of hope. Thoughtful research scientists understand that their data-based pontifications can only provide a background to better solutions. Action-based programs must enlist the energies and imagination of all of us. Several contributions show, from different angles, how it is possible to think and act differently. Klaus Radtke, a veteran of many fires and a survivor of many meetings about what to do about them, provides particularly useful and relevant information. He explains how he and his wife dealt with the hazards that they faced living on the wildland boundary. His story is anecdotal, but it points the way to the kinds of management actions and education programs that are needed. As Halsey asserts, mass panic and the mandatory evacuation of neighborhoods are not inevitable if there is prior planning and if citizens accept some responsibility for their own protection, as Radtke and his wife did. In another chapter, Radtke also provides useful advice on erosion control and pre-fire planning. In this section he adds his voice to the long list of experts who condemn the broad scale seeding of exotic grasses as a post-fire erosion control measure. But his is not a purist approach. He advocates seeding barley in small areas in a strategic manner, an example of how targeted efforts can achieve much better results with far less damage to the natural regeneration capacity of the chaparral system.

The inclusion of the views of fire fighters is another commendable feature. Although some might object to the "literary" approach—the attitudes and ideas are said to be factual, but it is conveyed as a fictional narrative—these sections help us to visualize the fire problem from the point of view of those taking the greatest risks to deal with it. It helps us to understand their frustrations with lack of understanding of fires and unrealistic expectations of the public for fire suppression and control. Further, no one will doubt that a workable solution must have the buy-in of the fire-fighting agencies.

The book begins with a mini-course in chaparral ecology. The author's intent is to provide a basic introduction to chaparral ecology to a general reader so that they can understand why fires occur and how vegetation responds. I applaud the objective, but there are a few problems. The reader needs to be cautioned that some of the terminology is idiosyncratic and a few facts seem at least disputable. Some examples: The etymology of chaparral is discussed (does it need to be?) with the dubious conclusion that chaparral is the anglicized form of *chaparro*. But, so a colleague in Barcelona tells me, the Academia Real says that *chaparral* is a perfectly good Spanish word—with a derivation from its root similar to *matorral* from *mata*. Halsey says that in Arizona they have only "mock chaparral". But they have scrub oaks, and so why not chaparral? I would expect brush loving 'Zonies to take offense. Contrary to what is implied, all chamise seeds do not require a high temperature treatment to germinate. "Type conversion" is not best defined as "the process by which one type of plant community replaces another". Although there are plenty of anecdotes about Native Americans using fire, it goes beyond the data to say that they "regularly burned the chaparral" and that a main purpose was to "reduce grizzly bear contact" (though it is understandable that they might like to do so). If the coastal sage scrub remains open "allowing for the continual recruitment of seedlings" how is it that it can stay open? Why are sclerophyllous leaves a "drought avoidance" adaptation, but closing of stomates an adaptation for "persistence"? Is "chameleon" a good term for those shrubs that (also incorrectly in my view) have been said to have "dimorphic leaves"? Describing *Artemesia californica* "establishing seedlings after fire" could mislead readers to think that they do not do so at other times.

In a section titled "chaparral mythology" the author devotes considerable space to allelopathy. While this is an interesting topic, it doesn't seem especially relevant to the fire problem. Likewise, although I am an ephemeralophilic myself, I am not sure that information on vernal pools is especially important for understanding fire. Given these sections it is surprising that coastal sage scrub is treated only very briefly. The author is on target, however, in his discussion of the concept of "senescence". According to popular belief and the opinion (but not so much the data) of some researchers, chaparral rapidly deteriorates with time, accumulating dangerous fuels. Hence the need for short rotation times between fires. But when the age-dead fuel relation has been tested with data, it has been found to be weak to non-existent. If we are going to treat "senescent" chaparral to keep it healthy, we had better move on to the desert, where "senescent" creosote bushes typically have many dead stems. Before we do this, however, we may want to think about the fact that creosote bush clones have been shown to be hundreds or even thousands of years old despite fire being rare to non-existent. Dead branches do not necessarily predict imminent demise.

There is a photographic section which includes mostly good pictures of 64 "essential" chaparral plants, although a number are really more characteristic of the coastal sage scrub. This is aimed at the beginner, and although other flower guides and books would have similar information, a case can be made for including them here to give the general reader a better idea about the organisms discussed in the text.

I found myself agreeing with the general conclusions that emerge collectively from the contributions and Halsey's editorializing. Not everyone will. Fuels-based solutions receive a pretty thorough drubbing in this book, and there are certain to be some who consider the book to be unbalanced. I think it probably is, but given the years of propaganda from the other side I think this is justified. Here we see the case made for the view that chaparral fires are primarily weather-controlled and therefore they cannot be eliminated by fiddling with fuels. Of course attention must be paid to fuels, but chamise bushes innocently doing their best to control erosion out in the large patches of native vegetation are not the main problem. The fuels to worry most about are those in our houses, landscaping, and yes, the native vegetation closest to what we wish to protect. Those who believe in the "fuel accumulation" theory will probably be OK with the "work the edges" idea, and will also agree that patterns of development should be more sensitive to fire risks. But they will probably not agree with the overall explanation for why we have a problem. Yet for much of what most ur-

gently needs to be done, the difference among the so-called experts is irrelevant. The problem arises more with respect to long-term strategies. If you think that creating an age mosaic that conforms to a presumed historical pattern will solve the problem, you will be in favor of a long-term strategy markedly different from another person who thinks that such a scheme will accomplish nothing. This book will not settle the controversy, but by presenting in one place a vigorous argument against a simplistic fuels-based explanation along with practical advice and perspectives from a variety of people who deal directly with fire and its consequences, it provides a valuable service. I can recommend the book to anyone who wants to understand the fire situation in California, but with the cautions given above.

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